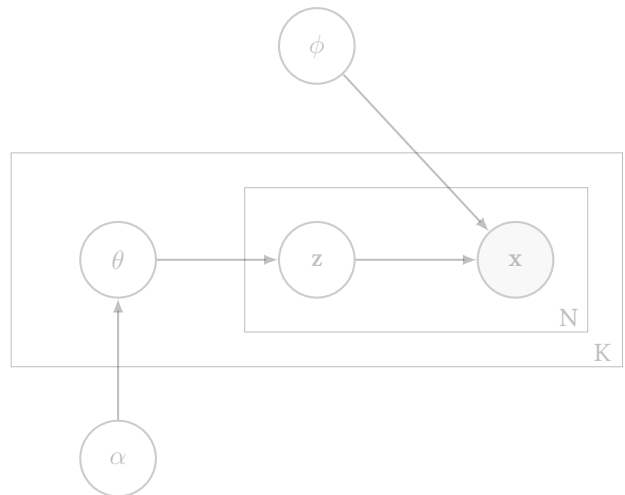


Jared Tobin

Programmer / Research Engineer / Data Scientist

Permanent Resident of New Zealand
Permanent Resident of Australia
Citizen of Canada

<https://jtobin.io>



Recent Positions

2013-2018

Pushforward Limited

Principal

Focus areas include functional programming, language engineering, fintech, data science, blockchains, distributed systems, cryptography, and market protocols.

Contracts:

Fugue, Inc. (2014-2017)

Principal design, compiler engineering, and team lead for the declarative data language *Ludwig*. R&D lead for Fugue's regeneration, dynamic scaling, and market interaction protocols.

(See the [Fugue playground](#).)

Openbrain, Inc. (2014)

Inference research and engineering for the probabilistic programming language *Baysig*. Designed and implemented a framework for mixing transition operators (see [article](#)). Developed a technique for implementing automatic symbolic differentiation (see [article](#)).

Bdellium, Inc. (2013)

System design, implementation, and performance optimization for the *PDOR* application. (Halved existing codebase size and improved runtime performance by a full order of magnitude).

2009-2011

Government of Newfoundland & Labrador

Senior Research Analyst

Department of Transportation & Works

Research, development, and implementation of various probabilistic and black-box models (neural networks, SVMs, Bayesian regression) for price & logistics prediction.

2007-2009

Government of Canada | Gouvernement du Canada

Research Analyst

Department of Fisheries & Oceans | Pêches et Océans Canada

Research, development, and implementation of dispersion estimators for highly-stratified sampling data, as well as development of visualization software for large trawl survey data.

Education

- 2018 **Doctor of Philosophy (Ph.D.), Statistics**
Dissertation: *Embedded Domain-Specific Languages for Bayesian Modeling and Inference*
The University of Auckland, Auckland, New Zealand
- 2011 **Master of Applied Statistics (M.A.S.)**
Practicum: *Approximate Marginal Inference in Models with Stratum Nuisance Parameters*
Memorial University, St. John's, Canada
- 2006 **Bachelor of Science (B.Sc.), Economics, Statistics**
Memorial University, St. John's, Canada

Noteworthy Workshops & Other Training

- 2016 **Economics of Cloud Computing Workshop**
EC 2016, Maastricht, Netherlands.
- 2015 **Bayesian Nonparametrics Workshop**
NIPS 2015, Montréal, Canada.
- 2015 **Type-Level and Generic Programming in Haskell**
ICFP 2015, Vancouver, Canada.
- 2014 **3rd Workshop on Probabilistic Programming**
NIPS 2014, Montréal, Canada.
- 2012 **CEA-EDF-INRIA Summer School in Parallel Functional Programming**
St. Paul lez Durance, France.
- 2011 **Machine Learning Summer School**
MLSS 2011, National University of Singapore, Singapore.

Committees

- 2009-2011 **Federal-Provincial-Territorial Committee on Transportation Statistics**
Statistics Canada | Statistique Canada
- 2009 **Full Cost Investigation of Transportation Working Group**
Transport Canada | Transports Canada

Publications & Writing

BOOKS

- 2017 Stella, J. et al. *Scalable Cloud Ops with Fugue*. The Pragmatic Bookshelf.

ARTICLES

- 2015 **Tobin, J.** Practical Recursion Schemes. *PragPub Magazine* 78, 24-33.

ACADEMIC

- 2010 Cadigan, N. and **Tobin, J.** Estimating the negative binomial dispersion parameter with highly stratified surveys. *Journal of Statistical Planning and Inference* 140, 2138-2147.

INFORMAL

- 2017 **A Simple Embedded Probabilistic Programming Language**
Embedding a minimalist & extensible probabilistic programming language in Haskell.
- 2016 **Encoding Statistical Independence, Statically**
A technique for encoding the notion of independence in probabilistic programs.
- 2015 **Markov Chains à la Carte**
Using mix-and-match Markov transition operators to do MCMC.
- 2014 **Automasymbolic Differentiation**
Implementing symbolic differentiation via automatic differentiation.

Selected Open Source

- 2017 **deanie**
An embedded probabilistic programming language.
- 2015 **declarative**
A shallowly-embedded language for declarative Markov Chain Monte Carlo (MCMC).
- 2013 **measurable**
A shallowly-embedded language for building and working with probability measures.
- 2012 **flat-mcmc**
Painless general-purpose sampling via an affine invariant ensemble sampler.

Selected Programming & Computing

PROGRAMMING (PROFESSIONAL EXPERIENCE)

Haskell, R, C, Bash, Python, Ruby, Javascript/Coffeescript, Go, MATLAB/Octave, SQL, VBA

PROGRAMMING (OTHER EXPERIENCE)

Rust, Idris, J, Scheme, Clojure, OCaml, Solidity, CUDA

NOTEWORTHY LIBRARIES & FRAMEWORKS

Haskell (QuickCheck, STM, lens, free, pipes, parsec, recursion-schemes, llvm-general, criterion)
R (plyr/dplyr, reshape2, ggplot2, magrittr, purrr, coda)
Rust (clap, rust-openssl, serde, nom)
Python (numpy, pandas, TensorFlow, scikit-learn, PyMC)
Javascript (React, Redux, web3, Angular, d3.js, highlight.js)
Ruby (Rails, Rspec/Capybara/Rantly, ActiveRecord, Mongoid)

COMPUTING

Unix stack (GNU coreutils/toolchain, git, tmux, vim, sed/awk, mutt, parallel)
Ops (Nix, Ansible, Vagrant, Monit, Travis CI, Docker)
Crypto (GPG, OpenSSL)
Markup (Markdown, pandoc, \LaTeX / \XeLaTeX , TikZ, Graphviz)
Distributed (ZMQ, AWS)
Compiler (LLVM, Ragel, flex, bison)